2005 Michigan Perinatal Survey Report

June 2007

Jointly developed by

Acknowledgments

Stephen Borders, PhD, Grand Valley State University who developed the survey, analyzed the results and designed the report.

Violanda Grigorescu, MD, MSPH, Director of Division of Genomics, Perinatal Health and Chronic Disease Epidemiology, State MCH Epidemiologist, who provided assistance and expertise along this process including the survey development, analysis and the final report

Douglas Paterson, MPA, former State MCH Director, who initiated the contract and thus offered the opportunity to conduct this perinatal survey

Jeffrey Taylor, PhD, Director Michigan Public Health Institute, who kindly shared the knowledge and history of Michigan's perinatal system of care

Larry Horvath and Stanley Nash for their advices and support in conducting the survey as a supplement to the CON survey

All public health professionals from the State Department of Community Health who provided support and comments as needed.

Table of Contents

Executive Summary

The development of high-technology care delivered in neonatal intensive care units made it possible to save the lives of low-birthweight babies who previously might have died. But not every hospital can have the sophisticated equipment and specialized staff to care for the small percentage of infants requiring intensive care. Thus, it made sense to organize services along geographic lines in a pyramid fashion. At the top of the pyramid is a Level III hospital, often at an academic medical center, that would treat the neediest newborns in a high-tech neonatal intensive care unit. Pregnant women at risk of delivering a low-birthweight baby would be identified early and transferred to these hospitals capable of offering the necessary care. In the middle is a Level II hospital that cares for mothers with moderate complications and/or their moderately ill newborns. The foundation of the pyramid is Level I hospitals, treating mothers and newborns with only minor or no birthing complications. These regional networks have been widely credited as one of the principle reasons for the rapid decline in neonatal mortality rates over the last twenty years. Several studies have confirmed the value of transferring high-risk mothers and infants into Level IIIs.

Michigan has experienced many changes in the health care system that had an impact on the proportion of high-risk pregnancies as well as their outcomes. In a desire to understand the current state perinatal system, Michigan Department of Community Health (MDCH) initiated in 2005 a collaborative effort with the Grand Valley State University. The results of that effort are presented here within this report.

A perinatal survey was developed based on the latest American Academy of Pediatrics (AAP) guidelines to assess each hospital's operational and staffing capacity in offering perinatal services. The perinatal survey was sent to each of Michigan's existing birthing hospitals at that time (97). Each hospital was also asked to self-evaluate its capabilities at Level I, II or III. The results contained in this report compare the responses from each hospital based on their response level (i.e. Level I, II and III).

Major Findings

No formal regionalized perinatal system exists in Michigan today. Although Michigan once led the nation in developing the regionalized approach to perinatal care, it is no longer the case. The Michigan guidelines do not reflect the current practice patterns and were last updated in 1986. A number of other states have taken the lead (i.e., Massachusetts, Virginia, Illinois, New York, Florida, and Washington, Louisiana) and have well-established protocols for delivering perinatal care.

The benefits of a well coordinated regionalized perinatal system are clear. In Washington State and Wales, researchers found babies weighing between 1000g and 1499g fared less well if they were born in Level I facilities than if they were born in more sophisticated hospitals. Other researchers have also found similar results when examining neonatal mortality among infants 1000 to 1499g, finding a greater than two-fold increase in neonatal mortality among infants of this birth weight when born at non-tertiary hospitals. In California, the proliferation of community Level II+ Neonatal Intensive Care Units (NICUs) resulted in an increased number of very low birth weight infants at these sites, with fewer births at both regional Level III and intermediate Level II NICUs. The researchers ended their research recommending that the level of care available and offered at the hospital of birth is very important for survival and this strongly supports the concept of moving women with preterm labor to the appropriate regional hospital in time rather than transferring the mother and infant after birth.

The identification of Level III hospitals in Michigan based solely on the number of licensed NICU beds is inadequate. When compared to previous data, the hospitals self classified as Level III represent less than half (44%) of the 24 birthing hospitals with licensed NICU beds at the time of the survey. In addition, this single method provided little information about the staffing and service capabilities of the hospitals operating in the state.

Thirty-nine hospitals classified themselves as Level I facilities, 19 as Level II facilities and 13 as Level III facilities. Seventy-one birthing hospitals completed the survey, which translates into a response rate of 72.4%.

The three-tiered classification scheme most likely needs further adjustment to account for the variation within each level. Hospitals reported great variability among staffing and service capacities within the three level pyramid

classification scheme. This suggests that hospitals could be further classified within each level as high and low capacity, giving a six level pyramid classification scheme. Some states have begun to opt for such a system.

A number of hospitals appear to have misclassified the level of perinatal care their hospitals provide. Without clear guidelines from the State of Michigan, each hospital was asked to self-evaluate its capabilities as either Level I or II or III hospital. Although most hospitals appear to have appropriately classified the level of perinatal care their respective hospital provides, there were some misclassifications as well. A number of hospitals apparently underestimated and overestimated the level of perinatal care their hospital provides.

Levels of Perinatal Care: Background and Definition

In 1976, the March of Dimes Committee on Perinatal Health designated three levels of perinatal care: Level I, II and III. While this typology largely remains in place, the numerical designations have been replaced with functional and descriptive designations over the years because of the complexity in providing perinatal care services. The three basic levels are summarized below and detailed in Figure 1., as described in the latest American Academy of Pediatrics (AAP)/American College of Obstetricians and Gynecologists (ACOG) guidelines.

Level I – Basic Care

- Surveillance and care of all patients admitted to obstetric service: physical examination and interpretation of findings; routine laboratory assessment; assessment of gestational age and normal progress of pregnancy; ongoing risk identification; mechanisms for consultation and referral; psychosocial support; childbirth education; and care coordination.
- Established triage system for identifying high-risk patients who should be transferred to a higher level facility.
- Proper detection and initial care of unanticipated maternal-fetal problems that occur during labor and delivery.
- Capabilities to begin an emergency cesarean delivery within 30 minutes of the decision to do so.
- Availability of appropriate anesthesia, radiology, ultrasound, laboratory and blood bank services on a 24 hours basis.
- Care of postpartum conditions.
- Resuscitation and stabilization of all neonates born in the hospital.
- Evaluation and continuing care of healthy neonates in a nursery or with their mothers until discharge.
- Adequate nursery facilities and support for stabilization of small or ill neonates before transfer to a specialty or subspecialty facility.
- Consultation and transfer arrangements.
- Parent-sibling-neonate visitation.
- Data collection and retrieval.

Some basic care facilities may provide continuing care for neonates who have minor problems.

Level II – Specialty Care

In addition to all of the services provided by a Level I hospital, a Level II hospital will also provide some enhanced services, such as:

- Care of appropriate high-risk women and fetuses, both admitted and transferred from other facilities.
- Stabilization of severely ill newborns before transfer.
- Treatment of moderately ill larger preterm and term newborns.

Care in a specialty level facility should be reserved for stable or moderately ill newborns that have problems that are expected to resolve rapidly and that would not be anticipated to need subspecialty level services on an urgent basis. These situations usually occur as a result of relatively uncomplicated preterm labor or preterm rupture of membranes at approximately 32 weeks of gestation or later.

Although some neonatal subspecialty care level hospitals also have neonatal intensive care units, the availability of perinatal subspecialty expertise often is neonatal medicine and not maternal-fetal medicine. Availability of pediatric sub specialists, such as cardiology, surgery, radiology is variable. Preterm labor and impending delivery at less than 32 weeks of gestation usually warrants maternal transfer to a subspecialty center as do gestations of less than 32 weeks.

Level III – Subspecialty Care

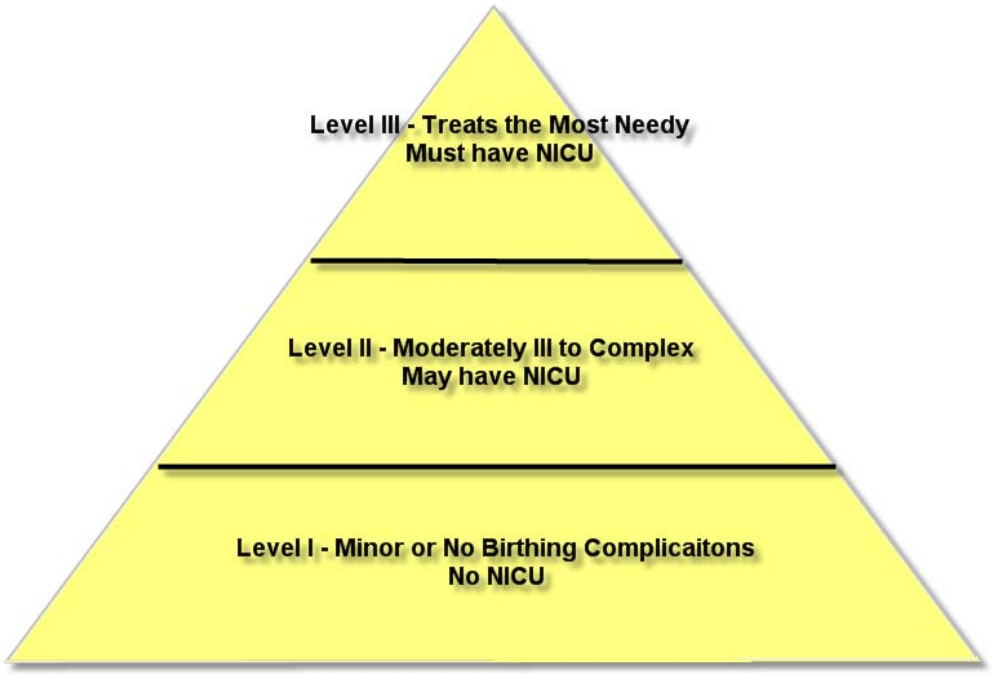
In addition to all of the services provided by a Level I and Level II hospital, a Level III hospital will also provide comprehensive services, such as:

- The provision of comprehensive perinatal care services for both admitted and transferred women and neonates of all risk categories, including basic and specialty care.
- Evaluation of new technologies and therapies.
- Where appropriate, responsibility for regional perinatal health care service organization and coordination including:
    - Maternal and neonatal transport.
    - Outreach support and regional educational programs.
    - Research support and initial evaluation of new technologies and therapies.

- Analysis and evaluation of regional data, including those on perinatal complications and outcomes.

The services provided by a subspecialty care facility vary markedly from those at a specialty facility. Subspecialty care services include expertise in neonatal and maternal-fetal medicine. Both usually are required for management of pregnancies with threatened maternal complication at less than 32 weeks of gestation. Fetuses that may require immediate complex care should be delivered at a subspecialty care center.

Figure 1: Regionalized Perinatal System Hierarchy



Background and History of Regionalized Perinatal Programs

Regionalization of health care is not new. Some form of it has been advocated in the health care delivery system for nearly sixty years, but the execution of the concept has not fared well in the diversified health care delivery system in the United States (*Lewis, 1977*). The Regional Medical Program (1965) targeted heart disease, cancer and stroke as conditions that would benefit from regionalization but the program suffered and was relegated to being another great American idea (*Diamond, 1974*). The Comprehensive Health Planning Law (PL89-749) was developed to promote plans for health care but there was more hope than result. The law was lacking in enforcement power and local health planning groups spent enormous quantities of time presiding over local political issues (*Butterfield, 1980*).

Regionalization of perinatal care can be traced to the development of premature infant centers in the United States during the 1930's and 1940's. While the premature infant centers spread throughout the country during this period, there was little in the way of standards of perinatal practice as we know it and the impact of the centers on infant morality in the U.S. was modest *(Butterfield, 1980).*

Many of the past efforts to establish regional programs to improve access to care, to increase the number of physicians or to relocate professionals, etc. have been federally funded. Regional perinatal care programs attracted some demonstration funds; public, private and voluntary funds flowed through a pluralistic network of agencies, institutions and organizations in a disjointed and uneven approach. The diversification of program funding and direction seems to be a strength that carried regional perinatal programs forward.

There have been positive consequences of regionalization on neonatal outcomes. While the improvement of the pregnancy outcomes is the major goal, regional perinatal education, expanded role of nursing, inter-hospital care, shared services and systems development can be identified as well as benefiting from the macro concept of regionalization (*Butterfield, 1980*).

At the national level, the infant mortality rate (IMR) position of the U.S. among industrialized nations had been a source of concern. From 1950 to 1965 the IMR remained almost static at 25/1000. In the next 15 years, as regional perinatal care developed in most regions of the country, the IMR fell by 50% to a record low of 13/1000 in 1979. Most of that improvement has been for newborns in the first month of life as all but 15 states reported neonatal mortality rates (NMR) less

than 10/1000 in 1978. In the following years, infant mortality has never recorded such a significant decrease but the perinatal regionalization hasn't been evolving much either and in some states has not even been functioning in the last two decades (i.e., Michigan). Today the infant mortality rate is 6.8/1000 in the U.S., with a more than doubled rate in Blacks population (14/1000) compared to Whites (5.7/1000) (NCHS).

When examining a number of measures related to prenatal care access and birthing outcomes, Michigan ranks significantly lower when compared to other states and national estimates. The 2002 national infant mortality rate was 6.8/1000 births as compared to 8.2/1000 births in Michigan (MDCH website, The Annie E. Casey Foundation, 2006a). The percent of Michigan mothers having low birthweight babies (8.2%) *(The Annie E. Casey Foundation, 2006a)* also exceeds the national average of 7.9% *(The Annie E. Casey Foundation, 2006b)*.

Has Regionalization Improved Outcomes? – Peer Reviewed Studies

The advent and diffusion of neonatal intensive care services during the late 60s and 70s resulted in a marked reduction in neonatal mortality *(Cifuentes et al., 2002).* Despite the effectiveness and the recommended guidelines from both the American Academy of Pediatrics and American College of Obstetricians and Gynecologists of providing hospital-based perinatal care organized within geographic regions, the process seems to be breaking down in a number of areas. Changes in medical economics and medical care have challenged perinatal regionalization in recent years. This seems primarily due to increased competition for patients and managed care that may discourage referrals of high-risk obstetrical patients *(Pollack, 1996)*.

Several studies have sought to evaluate regionalized perinatal programs throughout the country. In Washington State and Wales, researchers compared the perinatal regionalization and neonatal mortality (Rosenblatt et al., 1996). Rosenblatt et al. found that neonatal care was much more regionalized in Washington State than in Wales. As a result, very low-birth weight babies are much more likely to be in a referral center in Washington State than in Wales. The crude mortality rates were the same for both Wales (2.32/1000) and Washington State (2.47/1000) among several categories, such as babies weighing over 1000g. In both settings, babies weighing between 1000g and 1499g fared less well if they were born in Level I facilities than if they were born in more comprehensive care facilities (hospitals). In Washington State, mortality rates for babies weighing more than 1500 g were the lowest, suggesting that the

community hospitals are "extremely diligent" in effecting intrauterine transfer of women likely to have poor perinatal outcomes irrespective of the baby's predicted birth weight. Other researchers have also found similar results when examining neonatal mortality among infants 1000 to 1499g. Yeast et al. and Powell et al. found a greater than two-fold increase in neonatal mortality among infants of this birth weight when born at non-tertiary hospitals (*Powell, Holt, Hickok, Easterling, & Connell, 1995; Yeast, Poskin, Stockbauer, & Shaffer, 1998*).

Studies in other parts of the country have also found similar results. In Cincinnati, the odds of death or any of the four major morbidities (Brochopilmonary dyslpasia (BPD), intracranial hemorrhage (ICH), severe retinopathy (ROP), and necrotizing intercolotis (NEC)) with very low birth weights who were born at non-subspecialty perinatal centers were twice that for infants born at subspecialty perinatal centers SPCs. The odds of death or major morbidity remains increased despite controlling for differences in maternal, infant, and practice characteristics (Warner, Musial, Chenier, & Donovan, 2004). In California, the proliferation of community Level II+ NICUs resulted in an increased number of very low birth weight infants at these sites, with fewer births at both regional Level III and intermediate Level II NICUs *(Cifuentes et al., 2002).* Cifuentes et al. ended their research recommending that the level of care that is available at the hospital of birth is much more important for survival than is the level of care that is received and strongly support the concept of moving women with preterm labor to the appropriate regional hospital rather than transferring the mother and infant after birth.

A perinatal study of Medicaid managed care organizations (MCOs) in the TennCare program found differences in infant deaths and in the delivery of high-risk infants in hospitals lacking appropriate neonatal facilities *(Cooper, Hickson, Mitchel, & Ray, 1999).* Cooper et al. found that mothers enrolled in seven of the states smallest MCOs had slightly increased odds of having an inadequate number of prenatal care visits as compared to the state's largest MCO. There were no statistically significant differences in birth weight, but one MCO in particular; infants were 2.8 times more likely to die in the first 60 days of life than were infants in the largest MCO. The MCO in question had 38.1% of its Extremely Low Birth Weight (ELBW) infants delivering in a non-Level III hospital as compared to the largest MCO, where only 20% of its ELBW infants were delivered in a non-Level III hospital. While the smaller MCOs had a higher proportion of women with inadequate prenatal care visits, they also were more likely to include higher risk women: black, unmarried, and low maternal neighborhood income.

Robert Wood Johnson Initiatives and their potential impact

The Robert Wood Johnson Foundation began to explore whether regional perinatal networks were indeed feasible, whether they could reduce neonatal mortality, and if so, whether decreasing mortality resulted in an increase in developmental or other problems as low-birth weight babies survived. One of the principle catalysts for the Foundation's involvement was Irwin R. Merkatz, now chairman of the Department of Obstetrics and Gynecology at the Albert Einstein College of Medicine of Yeshiva University in the Bronx, and then at Case Western Reserve University in Cleveland, Ohio. During 1972 and 1973, Merkatz spoke with Walsh McDermott, special adviser to the Foundation, and David E. Rogers, president of the Foundation, about the importance of undertaking a perinatal demonstration project. It was an opportunity to do widely what had been shown in only a few places as workable. Within the Foundation, McDermott developed the idea of funding a demonstration to test the feasibility of establishing regional perinatal networks.

After reviewing 34 applications, the Foundation selected eight sites and awarded $17.6 million in grants between 1975 and 1979. The grantees were chosen because they were geographically, socially, and economically diverse: the state of Arizona, Cleveland, Dallas County in Texas, three contiguous areas in Los Angeles, Manhattan's Upper West Side, and a 15-county area around Syracuse, New York. The thought was that if the demonstrations of regional networks worked in these very different places, they would serve as models for similar regions elsewhere.

In 1980, the Foundation awarded $2.8 million to three researchers for a two-year evaluation of the project. The team found that so much had been happening to improve perinatal health nationally that it was hard to see any effect at the eight projects that differed from effects that were occurring in the rest of the country. Neonatal mortality rates had fallen not only at the eight sites but also in the comparison regions: an 18-county area around Albany; six health districts in Brooklyn, New York; a six-county area around Buffalo, New York; Harris and Tarrant counties in Texas; an 11-county area around Rochester, New York; San Diego county; and, finally, Wayne County, Michigan. Between 1974 or 1975 and 1978 or 1979, neonatal mortality in the funded areas fell an average of 19 percent, while it dropped by 25 percent in the comparison areas. The evaluators attributed two-thirds of the decline to the increased survival of low-birth weight babies. This increased survival was due, in turn as the authors noted, to the early identification of at-risk mothers and to the increased delivery of high-risk infants

in tertiary centers—that is, Level IIIs. In other words, the Regionalization had clearly shifted the location of delivery: by the end of the decade, 50 percent of low-birth weight babies and 60 percent of very low-birth weight babies were being delivered in Level III centers in the foundation-funded areas. According to Johnson, whereas before the program about 90 percent of the transfers were made after the baby was born, about half of the transfers were now made before birth.

Over the years, several studies have confirmed the value of transferring high-risk mothers and infants into Level IIIs. For example, Nigel S. Paneth of Michigan State University found that mortality of low-birth weight babies was significantly higher in Level I and Level II centers than it was in Level IIIs—in some areas, mortality decreased by one third to one half when the babies were tended to in tertiary centers.

Regional networks have been widely credited as one of the principle reasons for the rapid decline in neonatal mortality rates in the last several decades. Another principal reason included: the introduction in the late 1980s of surfactant replacement therapy, which reduced the incidence of lung disease in newborns. However, the highly specialized services offered at the tertiary centers (Level III) may count for the successful use of this therapy as well.

Despite their recognized effectiveness, the regional perinatal networks have begun to fall apart. They began to unravel in the 1980s, and the process continued with greater velocity in the 1990s. Two primary reasons explain this: first, the competition for patients that has developed between Level II and Level III hospitals and, second, the effect of managed care, which encourages the transfer of patients within the managed care company's network rather than within geographically constructed networks.

The crumbling of regional perinatal networks is occurring within a health system that continues to lag behind those of other developed countries.

Experts agree that even though the unified record-keeping model and the region-wide system of communication were never universally adopted, they are still relevant today: they offer a means of tracking risk and care in a way that could shed greater light on the persistent and poorly understood issues of preterm delivery, low birth weight, and racial differences. So it remains perplexing and upsetting to many observers—James Lemons and Irwin Merkatz among them—that by the end of the 1970s the country seemed ideally poised to build on

the regional perinatal networks and to further improve and integrate maternal and child health care services, and that now, at the beginning of the twenty-first century, such a system is not in place. Given this, the strengths and failings of the Foundation's Regionalized Perinatal Care Program have particular resonance today. The program's accomplishments as well as its limitations—and, some would argue, its failings—suggest that a stronger national mechanism needs to be in place in order to better protect infant and maternal health.

States roles in the evolution of perinatal care in the United States

Collaborative interaction between a responsible state agency, usually the Title V Maternal and Child Health (MCH) program staff, and other parties including hospitals and care providers began in the 1970s with the initial conceptualization and implementation of regionalized perinatal care. State roles in assuring perinatal system accountability vary widely – from passive watching on the sidelines to active regulatory power over neonatal intensive care units (NICU). (*Johnson KA and Little GA. State Health Agencies and Quality Improvement in Perinatal Care. In Horbar JD and Gould JB Eds. Evidence-Based Quality Improvement in Neonatal and Perinatal Medicine Pediatrics, 1999; 103(s):233-247).*

As a reminder, from the Children's Bureau to today's federal state partnership in MCH programs, quality improvement has been used as a tool aimed at improving health outcomes (Table 1). The history of efforts to reduce mortality and morbidity illustrate the long tradition of quality improvement efforts in perinatal care. Maternal mortality is one such example.

TABLE 1. Chronology of the Evolution of MCH and Perinatal Care Policy and Guidelines

1912	Children's Bureau established by Congress as first US public health "grant-in-aid" program
1921	Sheppard-Towner Act passed; provided grants to states with enabling legislation to improve access to MCH services
1929	Sheppard-Towner Act repealed
1935	Social Security Act with Title V signed; plan and provision of an infrastructure for MCH services distinguishes that population. Title V requires state MCH programs to be located in state health agencies
1946	Hospital Survey and Construction Act (Hill-Burton) Grants to states to build hospitals

1964 Medicare and Medicaid programs enacted into law to increase access to care for elderly and poor

1976 *Toward Improving the Outcome of Pregnancy: Recommendations for the Regional Development of Maternal and Perinatal HealthServices* (TIOP I)

1981 Title V funds combined with other programs as an MCH block grant as a result of OBRA

1983 First edition *Guidelines for Perinatal Care* published by American Academy of Pediatrics and American College of Obstetricians and Gynecologists.

1984 First Medicaid expansion to extend coverage beyond AFDC income levels, with a series of expansions continuing through 1990

1988 Institute of Medicine report on *The Future of Public Health*

1989 OBRA '89 (Omnibus Budget Reconciliation Act of 1989) provided amendments to Title V including reporting requirements

1991 Federal MCH program unit changed (elevated) from Office to a Bureau.

1993 *Toward Improving the Outcome of Pregnancy: The 90s and Beyond* (TIOP II)

1995 GRPA, P.L. 103-62 (Government Performance and Results Act) created additional accountability requirements for Title V and other programs

1998 Maternal and Child Health Bureau National Performance Guidelines Measures

(*Johnson KA and Little GA. State Health Agencies and Quality Improvement in Perinatal Care. In Horbar JD and Gould JB Eds. Evidence-Based Quality Improvement in Neonatal and Perinatal Medicine Pediatrics, 1999; 103(s):233-247.)*

The 1976 publication of *Toward Improving the Outcome of Pregnancy: Recommendations for the Regional Development of Maternal and Perinatal Health Services* (TIOP I) is recognized as an historical marker of formal acceptance of the concept of regional allocation of resources according to need (Committee on Perinatal Health. (TIOP I) *Toward Improving the Outcome of Pregnancy: Recommendations for the Regional Development of Maternal and Perinatal Health Services, White Plains, NY: March of Dimes Birth Defects Foundation, 1978*), and as a stimulus for the rapid diffusion of regionalization across the country. The federal and state government maternal and child health agencies structured under Title V of the Social Security Act were proactively involved in advancing policies and implementing programs to support these regional system structures.

Between the mid-1970s and mid-1980s, perinatal care activities such as risk identification, transport of patients, application of technologically sophisticated equipment, and use of the levels of care concept became the nationwide standard of care (*Gilstrap LC and Ho W. (Ed.) Guidelines for Perinatal Care (5th edition). Washington, DC: American Academy of Pediatrics and American College of Obstetricians and Gynecologists. 2002).*

The increasing number of neonatologists more than four-fold at the same time that NICUs proliferated, often into low-volume units in smaller and smaller community hospitals, generated concern about the impact of so-called

"deregionalization." Subsequently the Committee on Perinatal Health was reconstituted leading to the publication in 1993 of *Toward Improving the Outcome of Pregnancy: the Nineties and Beyond* (TIOP II) (Committee on Perinatal Health (TIOPII) *Toward Improving the Outcome of Pregnancy: The 90s and Beyond.* White Plains, NY: March of Dimes Birth Defects Foundation, 1993). TIOP II included recommendations for: a) expanding the TIOP I primary emphasis on hospital care around the time of birth to include a more comprehensive spectrum including prenatal and preconception care, b) expanded use of data systems for quality improvement and improved accountability, and c) stronger roles for local/regional centers.

As a result, some concluded that over the past three decades, perinatal outcomes have improved significantly, but improving outcomes in a changing health care system is an ongoing challenge (*Kliegman RM. Neonatal Technology, Perinatal Survival, Social Consequences, and the Perinatal Paradox*. *AJPH*, 1995;85:909-913).

The consensus framework for public MCH functions states that one of the top 10 essential services to be performed by MCH agencies is to "evaluate the effectiveness, accessibility, and quality of perinatal health and population-based maternal and child health services." (Grason HA, Guyer B. *Public MCH Program Functions Framework: Essential Public Health Services to Promote Maternal and Child Health in America,* Baltimore, MD: Johns Hopkins University; 1995). Some would say that states don't have to do this, but a majority of observers would say it is an increasingly important role in today's public health agencies and MCH programs. Whether benefits coverage is through private insurance, a new State Children Health Insurance Program, or Medicaid and whether services are delivered in the public or private sector, state MCH programs have a role to play and have been assigned responsibility for the policy framework and structure that undergirds quality improvement efforts for the total cohort of perinatal patients in the state.

A 50-state telephone survey of MCH programs was undertaken in May and June of 1998 to clarify their operational and perceived role in promoting quality improvement in perinatal care. The survey suggested that with the exception of a few states, overall state health agency involvement with perinatal regionalization tended to be less active and regulatory and more passive or collaborative (G. A. Little and K. A. Johnson. A survey of state policies and

practices related to quality improvement in perinatal care. Unpublished data, June 1998).

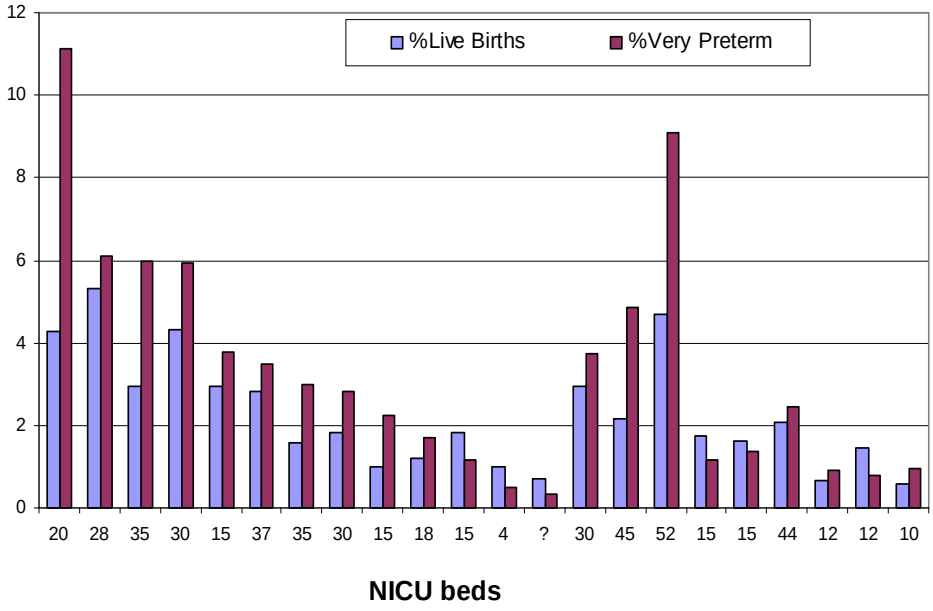
The state specific results of this survey conducted in 1998 are not available at this time but based on the current picture one could assume that Michigan is among the less active and less regulatory states.

Michigan's perinatal system: brief history and current status

Michigan has experienced many changes in the health care system that have impacted the proportion of high-risk pregnancies measured by birth-weight and gestational age, infant mortality rates and the risk for certain causes of death. Michigan led the nation in pioneering the concept of a regionalized perinatal system in the 1970s and 80s. During that time, Nigel Paneth of Michigan State University found that mortality of low-birth weight babies was significantly higher in Level I and Level II centers than it was in Level IIIs—in some areas, mortality decreased by one third to one half when the babies were tended to in tertiary centers. Despite the proven benefit of regionalized perinatal systems nationally and in Michigan, the state guidelines do not reflect the current practice patterns and were last updated in 1986. As a result, no formal perinatal system exists in Michigan today.

Without a formalized system, we identified 24 hospitals in Michigan prior to the survey as potential Level III health care centers. The identification of these hospitals as potential Level III health care centers was based on 2002 data of the number of licensed NICU beds (ranging from 4 to 52 beds). What is most notable about this figure is that a number of hospitals in Michigan seem to have disproportionate share of very preterm births.

Figure 2: Distribution of Live Births and Very Preterm (≤ 31 Wks. Gestation) Among Level III Hospitals by Number of NICU Beds



Using this method, little information could be provided about the staffing and service capabilities of Michigan hospitals to provide perinatal care. Thus, we developed a perinatal survey based on the latest American Academy of Pediatrics (AAP) guidelines to assess each hospital's operational and staffing capacity in offering perinatal services. A copy of the survey instrument is available in Appendix B. The AAP has developed guidelines for perinatal care based on the three hospital level approach along geographic lines in a pyramid fashion. The survey was sent to each of Michigan's 98 birthing hospitals. At the conclusion of the survey, each hospital was asked to self-evaluate its capabilities as either Level I or II or III hospital. Seventy-one birthing hospitals completed the survey, which translates into a response rate of 72.4%.

Methodology and Results

In the analysis, our goal was to examine a number of issues. First, we wanted to develop an estimate of the number of hospitals by level of perinatal care. Secondly, we wanted to develop some understanding each hospital's capabilities to provide perinatal care. Finally, we wanted to develop some further understanding of the capabilities that distinguished the Level III hospitals from Level I and II hospitals. Thus, we subsequently developed a focused analysis examining hospitals with NICUs in an attempt to understand the differences in their capacity and functioning.

The survey was designed to segregate the hospitals into one of the three levels (i.e. Level I, II or III) as prescribed by the AAP guidelines. Each hospital was also asked to respond to the level in which they believed their respective hospital provided perinatal care services in the State of Michigan. The comparisons were largely based on two general dimensions:

- Service Capabilities – defined as the ability of the hospital to provide specific aspects of care related to the provision of perinatal services (genetic consultation)

- Staffing Capabilities - defined as the specific physician and staffing expertise within the hospital for the provision of perinatal services (obstetric anesthesia)

With little prior knowledge of hospital capabilities, developing a systematic categorization of the hospitals by level of care based on AAP guidelines seemed most appropriate. We used cluster analysis to aid in classifying the hospitals as Level I, II or III. In its most basic sense, cluster analysis is a classification method for grouping objects of similar kind into respective categories (Everitt 1993). Cluster analysis is a generic term used for a wide variety of techniques used by researchers searching how to organize data into meaningful structures or taxonomies. The technique is generally viewed as an exploratory data analysis tool which aims at sorting different objects into groups where the degree of association between the two objects is highest if they belong to the same group. Although cluster analysis aids in developing meaningful structures among data,

it does so without providing an explanation or interpretation as to why the structures exist (Aldenderfer and Blashfield 1984).

In examining the AAP guidelines, our strategy was to assess each hospital on the two dimensions mentioned above: capabilities and staffing. Capabilities are simply the services that hospitals provide. For example, the AAP guidelines require that all hospitals have the "capability to begin an emergency cesarean delivery within 30 minutes of the decision to do so". The staffing assessment is a measure of the staff available to deliver perinatal services. Assessing hospital staffing levels on this domain included questions such as those related to the number of board certified physicians in areas such as obstetrics, family practice, neonatology, perinatalogy, etc.

Cluster Analysis – Determining the Perinatal Level of Care

One of the primary issues in performing cluster analysis is examining the scales of the variables. Variables that represent entirely different scales can be problematic in cluster analysis. For example, when clustering respondents on the continuous variables, such as the number of board certified physicians and dichotomous questions that involve either a "yes" or "no" response, the standard deviation of continuous variables is much greater than that for dichotomous questions and would dominate the solution. To avoid this problem, there are a number of options. First is to standardize each variable using a z score. The z score norms each variable with a mean of zero and a standard deviation of 1. Another method of standardization is to norm the variables from -1 to +1 which some researchers believe produces superior results to standardizing z scores (SPSS Inc. 2003).

We developed a standardized scale for each variable of interest. Each response was assigned a numerical value which indicated where on the scale such a response would fall between -1 and +1. Each of the categories within each response was assigned equal distances between -1 and +1. For example, questions with two possible responses were assigned -1 or 1; questions with three possible response categories were assigned -1, 0 or +1; questions with for possible categories were assigned a -1, -0.33, +0.33, or +1.

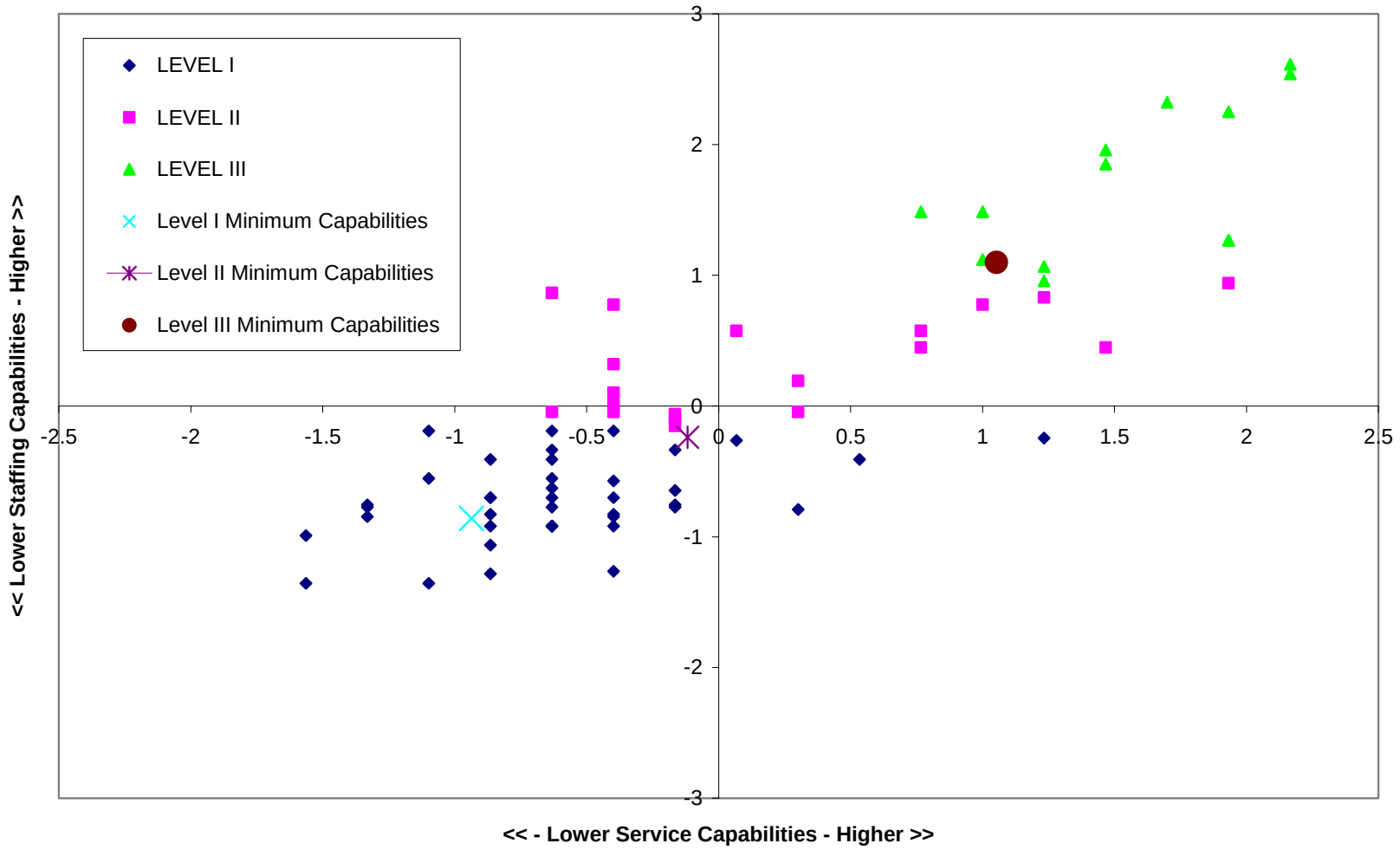
Questions with interval based responses, such as the number of board certified obstetricians posed some unique challenges and did not readily translate to the chosen method of standardization. To standardize continuous variables we sorted the data into tertiles. This approached

permitted us to assign each response into one of three categories. For example, hospitals that that reported having board certified obstetricians in the upper tertile were assigned a value of +1. Those that reported no board certified obstetricians at all were assigned a value of -1. The primary advantage to this approach is that it permitted the inclusion of scale variables in the analysis with the other ordinal and nominal variables so that a clearer pattern could emerge in the analysis. However, this method is not perfect and provides a rather gross measure of overall capabilities and staffing levels.

The results of the initial analysis are depicted in Figure 3. As expected, hospitals that identified themselves as Level III hospitals generally had greater service and staffing capabilities than hospitals identifying themselves as Level I or Level II hospitals. However, as apparent from Figure 3 , the clusters are not well defined. That is, there are not three distinct clusters representing the hospitals within each of the three levels. For example, there appears to be a number of hospitals that classified themselves as Level II hospitals that could be classified as a Level III hospital based on their responses to the survey instrument. In addition, there are a number of hospitals classifying themselves as Level III hospitals that have characteristics more associated with a Level II hospital. The same can be said for a number of Level II and Level I hospitals.

Although this standardization process develops an overall rating for each hospital for comparative purposes, there are several caveats to keep in mind when interpreting the results. First, we made no attempts to weight the data or individual questions because of a lack of clear guidance on the importance of individual questions. Thus, all questions included in the cluster solution impact the overall solution equally. Secondly, we also made no attempt to weight the variability within each of the questions. For example, we asked hospitals about the number of board certified physicians of various specialties on the medical staff at each hospital. However, when standardizing the variables for the cluster analysis, we coded each variable as 1=yes if the hospital reported at least 1 of the physician types in question on staff or 0 = no if there were no physicians on the medical staff. This method gave us a general understanding of the different types of specialists practicing within each hospital by perinatal level.

Figure 3: Scatterplot of Perinatal Hospitals by Service and Staffing Capabilities – All Hospitals



Focused Analysis on Hospitals with NICUs

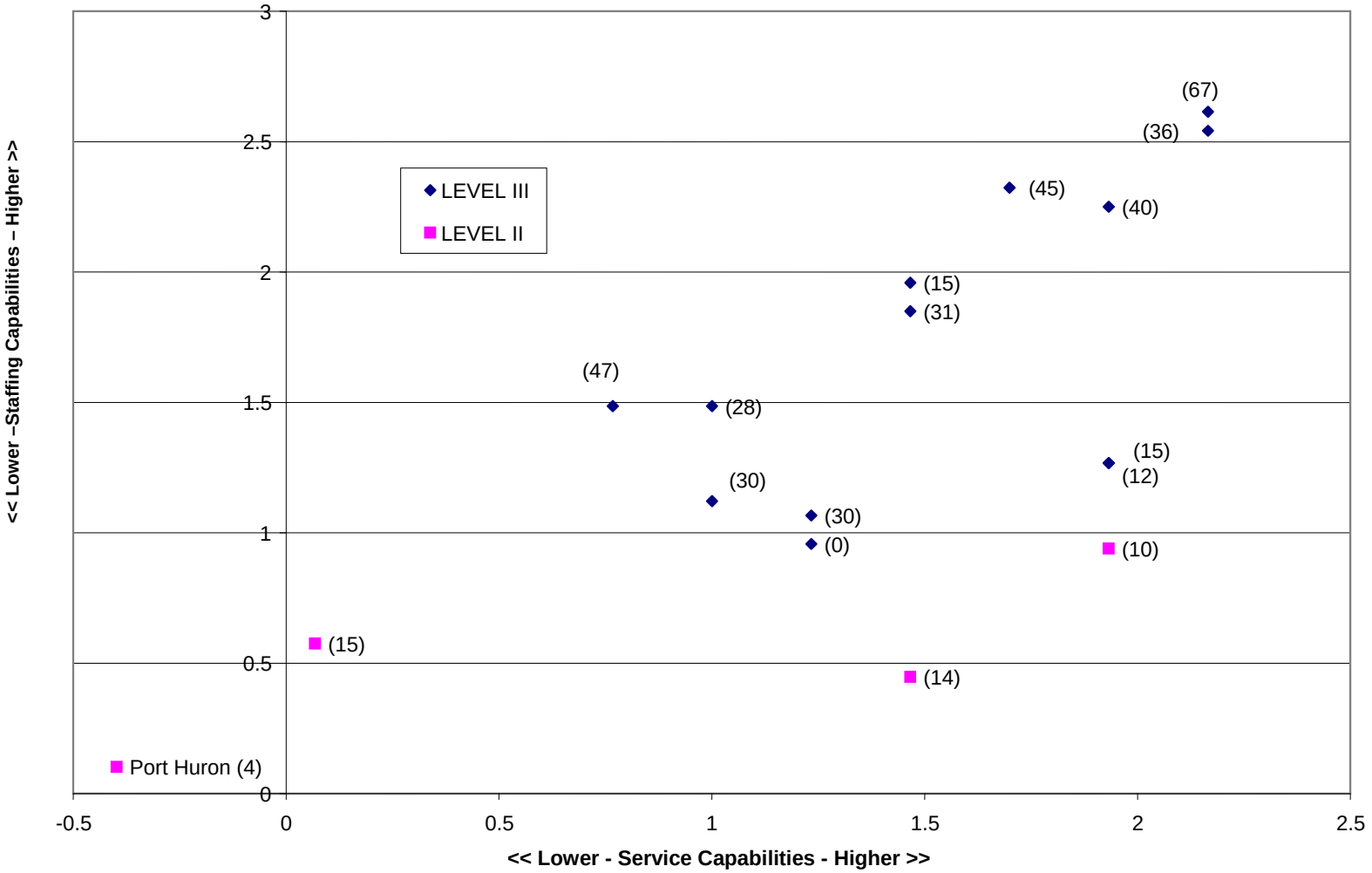
Because the perinatal system is centered on the Level III – subspecialty care hospital, we conducted secondary analysis on hospitals reporting NICU beds during the 2003 MDCH certificate of need (CON) annual survey. Figure 4 details the results of the cluster analysis by hospital level only for the selected hospitals. The number in parentheses represents the number of NICU beds the hospital reported during the 2003 MDCH CON survey.

The highest level of perinatal service and staffing capabilities among all of the hospitals responding to our survey was reported by the one having 67 NICU beds. In addition, other four hospitals also reported high levels of perinatal service and staffing capabilities. These seem to be accurately classified as the highest functioning Level III hospitals in the state. Another one has no NICU beds and under the AAP guidelines does not fit the definition of a Level III hospital, although it reported rather high service and staffing capabilities.

Four hospitals with NICUs also classified themselves as Level II perinatal hospitals. Based on their survey responses, one was the highest functioning Level II hospital and reports service and staffing capabilities consistent with a Level III hospital. Another one had rather high service capabilities, but seems to have lower staffing capabilities than other Level III hospitals and appears correctly classified as a Level II hospital. Despite possessing NICU beds, other two hospitals have demonstrably lower staffing and service capabilities. Based on their survey responses, they are clearly not Level III hospitals. In addition, not all Level II hospitals are represented in Figure 4 and nearly ¾ of all hospitals rating themselves as Level II reported higher service and staffing capabilities, despite the lack of possessing NICU beds.

Again, this analysis merely compares the presence of specific staffing and services within each hospital. It does not factor in the volume or overall capacity to handle specific numbers of patients.

Figure 4: Cluster Analysis of Hospitals by Self-Classified Perinatal Level



Critical Services of Level III Hospitals

To determine where some of the variability among Level III hospitals was occurring, we examined the minimum services hospitals must offer as prescribed by the AAP guidelines. There are 22 required services that hospitals must provide as listed in Table 1. Level III hospitals should provide all 22 services, Level II hospitals 15 and Level I hospitals 11. When examining the responses of Level III hospitals, there was little variability in the responses for this battery of questions as almost all Level III hospitals reported offering all or nearly all of the 22 required services.

Table 1: Required Services by Hospital Level Designation

Hospital Services	Required by Perintal Level		
	I	II	III
A. Surveillance and care of all patients admitted to obstetric service: physical examination and interpretation of findings; routine laboratory assessment; assessment of gestational age and normal progress of pregnancy; ongoing risk identification; mechanisms for consultation and referral; psychosocial support; childbirth education; and care coordination.	✓	✓	✓
B. Established triage system for identifying high-risk patients who should be transferred to a higher level facility.	✓	✓	✓
C. Proper detection and initial care of unanticipated maternal-fetal problems that occur during labor and delivery.	✓	✓	✓
D. Capabilities to begin an emergency cesarean delivery within 30 minutes of the decision to do so.	✓	✓	✓
E. Availability of appropriate anesthesia, radiology, ultrasound, laboratory and blood bank services on a 24 hours basis.	✓	✓	✓
F. Care of postpartum conditions.	✓	✓	✓

Hospital Services	Required by Perintal Level		
	I	II	III
G. Resuscitation and stabilization of all neonates born in the hospital.	✓	✓	✓
H. Evaluation and continuing care of healthy neonates in a nursery or with their mothers until discharge.	✓	✓	✓
I. Support for stabilization of small or ill neonates before transfer to a higher level facility.	✓	✓	✓
J. Consultation and transfer arrangements.	✓	✓	✓
K. Parent-sibling-neonate visitation.	✓	✓	✓
L. Care of appropriate high-risk women and fetuses, both admitted and transferred from other facilities.		✓	✓
M. Fetal diagnostic testing (biophysical tests, amniotic fluid analysis, basic ultrasonography).		✓	✓
N. Expertise in management of medical and obstetric complications.		✓	✓
O. Stabilization of severely ill newborns before transfer.		✓	✓
P. Treatment of moderately ill larger preterm and term newborns.		✓	✓
Q. Provision of comprehensive perinatal care services to both admitted and transferred women and neonates from other facilities.			✓
R. Advanced fetal diagnoses (targeted ultrasonography, fetal echocardiology).			✓
S. Advanced therapy (intrauterine fetal transfusion and treatment of cardiac arrhythmias).			✓
T. Medical, surgical, neonatal, and genetic consultation.			✓
U. Management of severe maternal complications.			✓
V. Evaluation of new technologies and therapies.			✓
W. Data collection and retrieval for reporting, evaluation of services or research purpose.			✓

We examined other questions related to services and the variability does not seem to be impacted by a single factor when examining services. However, some hospitals that rated themselves as Level III hospitals had no affiliation with a children's hospital or an academic institution. The same was true for staffing issues. No single issue or issues stood out among the Level III hospitals, but those with lower staffing and service capabilities were so because of several factors, such as having no physician on staff in certain highly specialized areas such as pediatric pulmonology, hematology, nephrology and genetics. Each of the hospitals with lower ratings among Level III respondents to our survey reported deficiencies in one or more of these highly specialized areas of practice.

Peer Comparisons

This section is a representation of each hospital's responses to the questionnaire. Hospitals were segregated into care levels according to the level at which they believed they provide perinatal care services in the State of Michigan. The results represented here are based solely on comparisons made within the same peer group (i.e. Level I, Level II and Level III).

The comparisons are largely based on two general dimensions:

- Service Capabilities – defined as the ability of the hospital to provide specific aspects of care related to the provision of perinatal services (i.e. genetic consultation)
- Staffing Capabilities - defined as the specific physician and staffing expertise within the hospital for the provision of perinatal services (i.e. obstetric anesthesia)

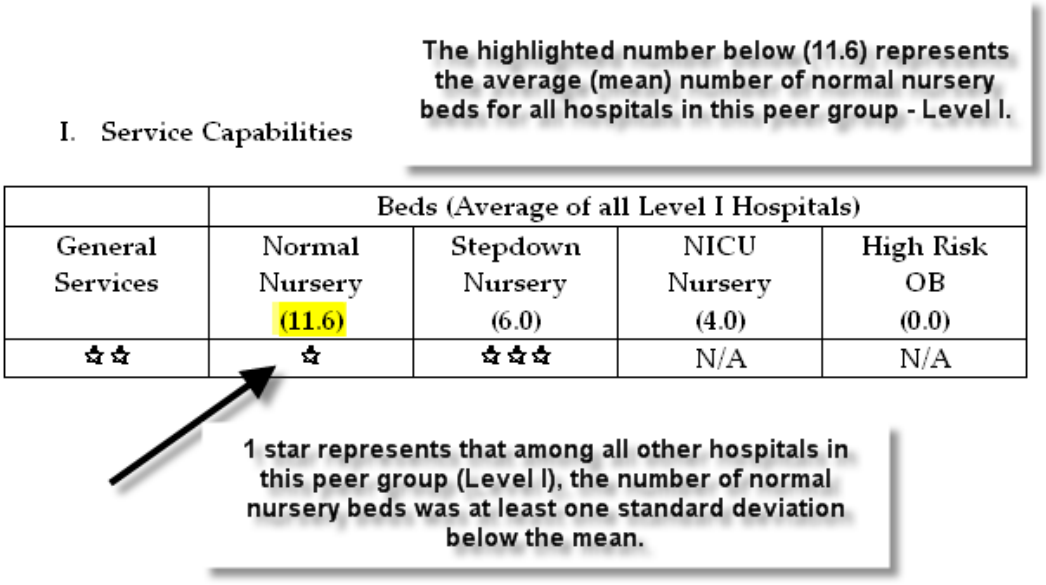
Within those dimensions, we also asked specific questions about the number and type of physicians, staff and beds related to the provision of perinatal services to get a better idea of the overall capabilities of providing perinatal services within the state.

Hospitals were compared to each other based on a composite score developed from the service capabilities, staffing capabilities. If the composite score for a hospital is one standard deviation or more above the mean composite score for all hospitals within that level, than the hospital's capabilities are noted with three stars. If the composite score for a hospital is one standard deviation or more below the mean composite score for all hospitals, then the hospital's capabilities are noted with one star. Scores that are between one standard deviation above or below the average score for all hospitals within the specified level are noted with two stars. One standard deviation means on average how much each score varies from a set of scores. This does not imply that these differences are statistically significant, but rather gives an idea of how hospitals compare to their peer institutions. For a graphical representation on interpreting the findings see the figures on the next page.

Figure 5: Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals.
☆☆	Between one standard deviation above or below the mean score for all hospitals.
☆☆☆	At least one standard deviation above the mean score for all hospitals.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Figure 6: Guide to Interpreting the Report Findings

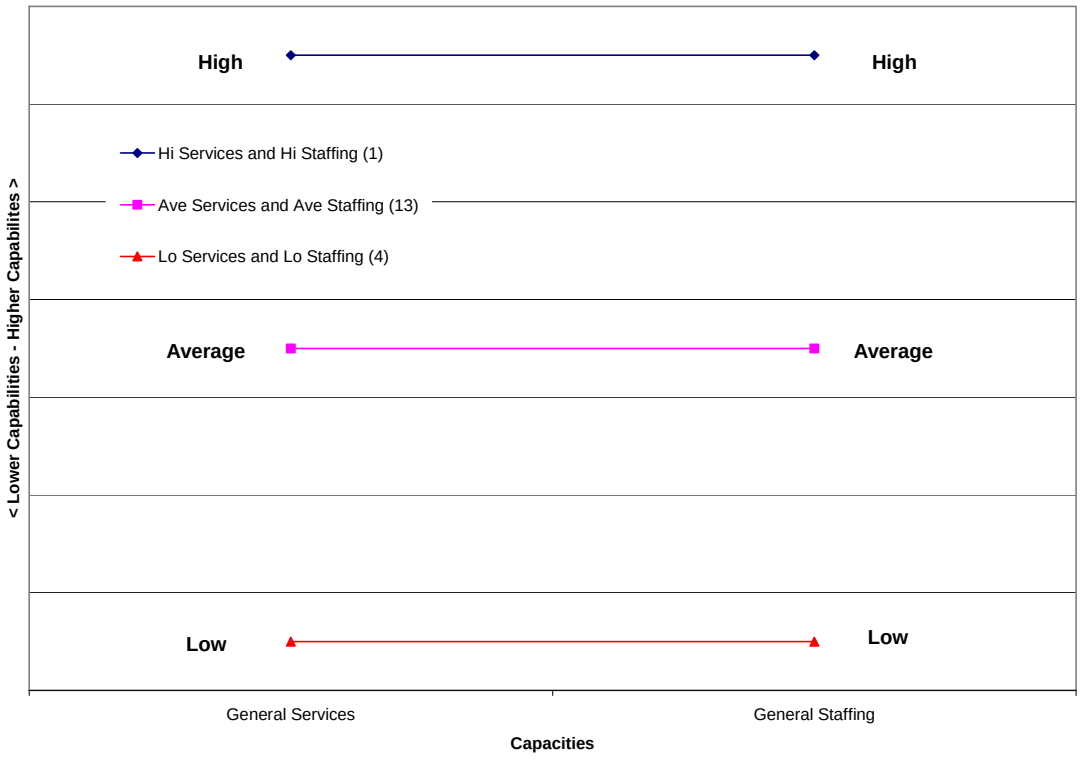


Level Summaries

Level I

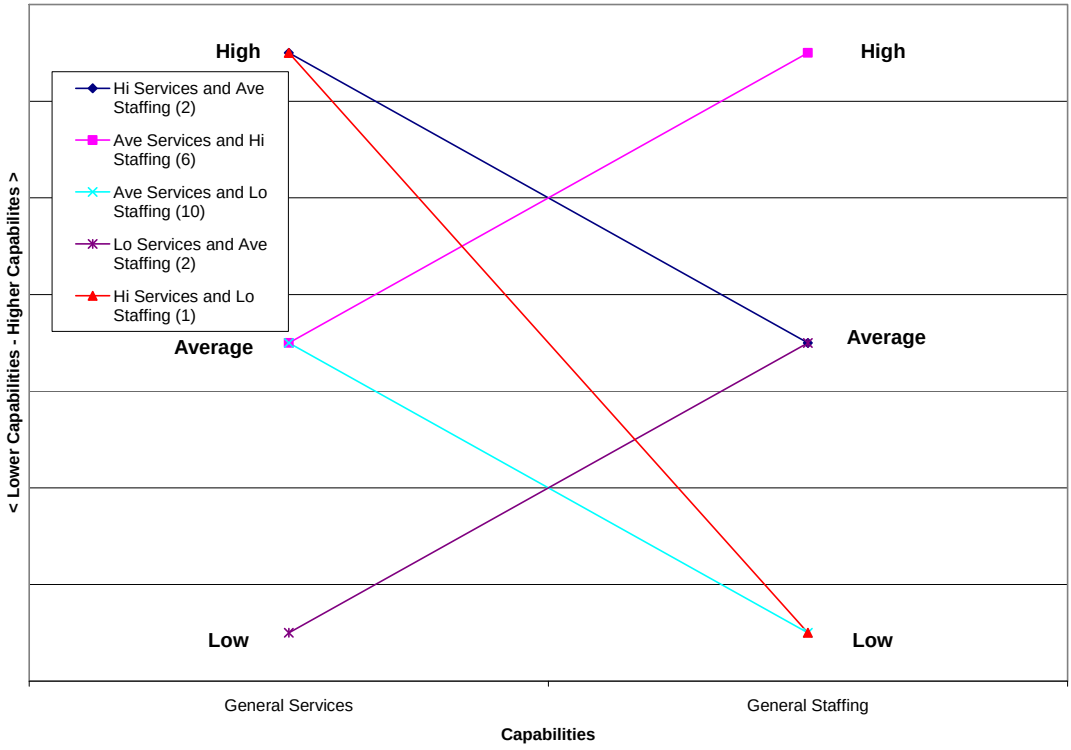
Thirty-nine hospitals classified themselves as Level I facilities. Within those 39 hospitals there was some variability among their self-reported staffing and service capabilities. Of the 39 Level I hospitals, 13 reported "average" general service and staffing capabilities (see Figure 7) as compared to all hospitals within this level. When examining the legend in Figure 7, the number in parentheses "i.e. (13)" indicates the number of hospitals in this level reporting capabilities as such. Four hospitals reported "lower" (at least 1 standard deviation below the mean for all hospitals in this level) general service and staffing capabilities. Only one hospital reported "higher" (at least 1 standard deviation above the mean for all hospitals in this level) general service and staffing capabilities. This may indicate that this hospital may be a Level II hospital, but not accordingly self-rated.

Figure 7: Summary of Level I Hospitals by Capacity - Group I



The remaining 21 hospitals reported levels of service and staffing capacities that defy simple description as these hospitals reported a blend of staffing and service capabilities (see Figure 8). For example, some hospitals reported "higher" service capabilities coupled with "lower" staffing capabilities. The discrepancies between the capacity in services and general staffing suggest that an accurate, onsite evaluation may be needed. For instance, those reporting high service capacity but average or low general staffing would need more providers for the corresponding available services. Another use of the findings suggests that within the Level I hospitals, there are ranges of functionality and capacities. Thus, some states have made further distinctions within the three level classification scheme. For example, hospitals within Level I could be further classified as Level I-A and Level I-B. Hospitals classified as Level I-A have demonstrated capacities to serve slightly more complex mothers and newborns than hospitals classified as Level I-B.

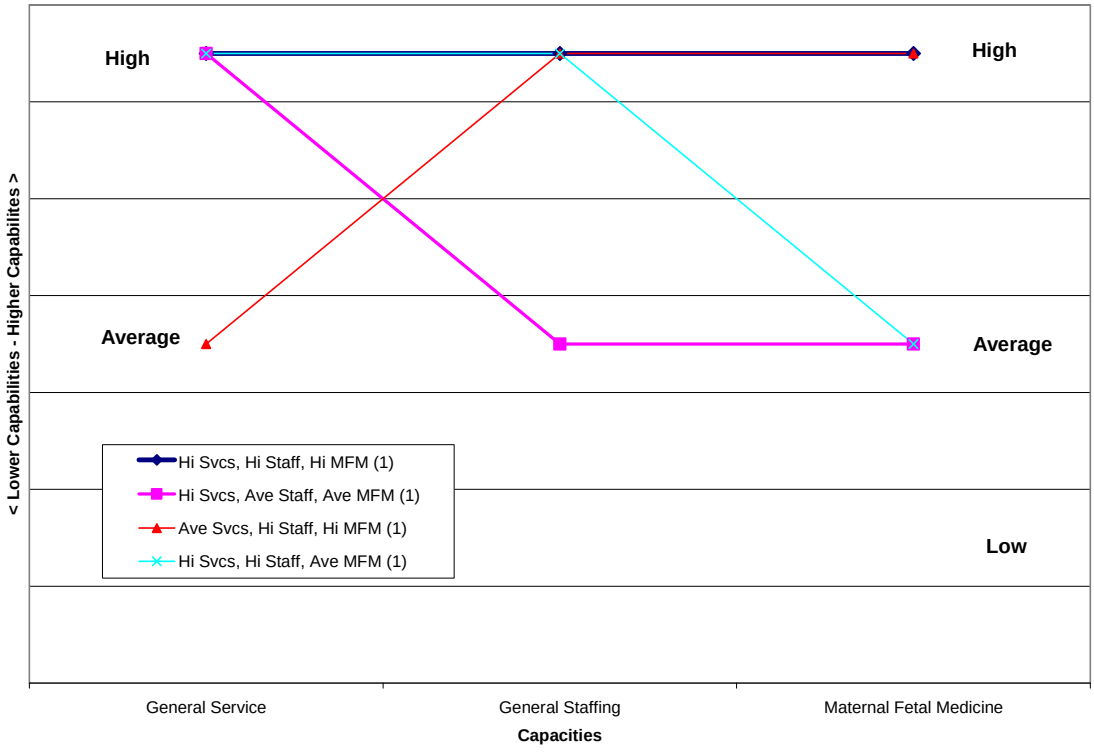
Figure 8: Summary of Level I Hospitals by Capacity - Group II



Level II

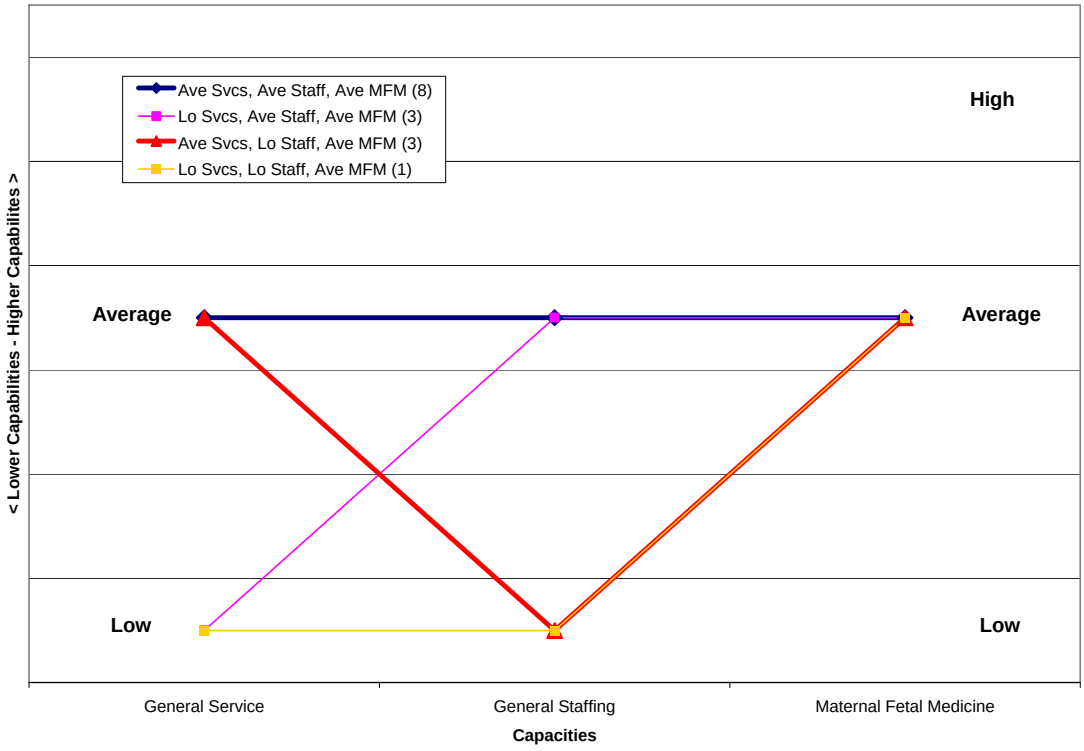
Nineteen hospitals classified themselves as Level II facilities. When examining Level II hospitals, we added the reported number of maternal fetal medicine physicians on staff in each hospital to the analysis. Maternal fetal medicine specialists are important when examining Level II and III hospitals because such hospitals deal with “high risk", "complicated", or otherwise worrisome pregnancies. The analysis is represented in the two figures below (see Figure 9 and Figure 10). We attempted to segregate the hospitals with “higher” (as compared to all hospitals in Level II) capacities in Figure 9 and hospitals with “average” and “lower” capacities in Figure 10 . There were only four hospitals that reported “higher” than average capacities in at least one of the following: general services, staffing and maternal fetal medicine. In addition, only one hospital reported “higher” general services, staffing and maternal fetal medicine within all Level II hospitals. In addition, this hospital that also has a NICU may be a Level III hospital, but not accordingly self-rated.

Figure 9: Summary of Level II Hospitals by Capacity - Group I



Of the remaining 15 Level II hospitals, the majority of the hospitals (8) reported general services, staffing, and maternal fetal medicine as "average" when compared to all other hospitals within this level. The remaining hospitals in this level reported "lower" capacities in at least one of the following: general services, staffing and maternal fetal medicine. Again, the above discrepancies could be useful in the further classification of Level II hospitals by disaggregating hospitals into two levels: Level II-A and II-B based on the services by level of care as defined by AAP and American College of Obstetricians and Gynecologists.

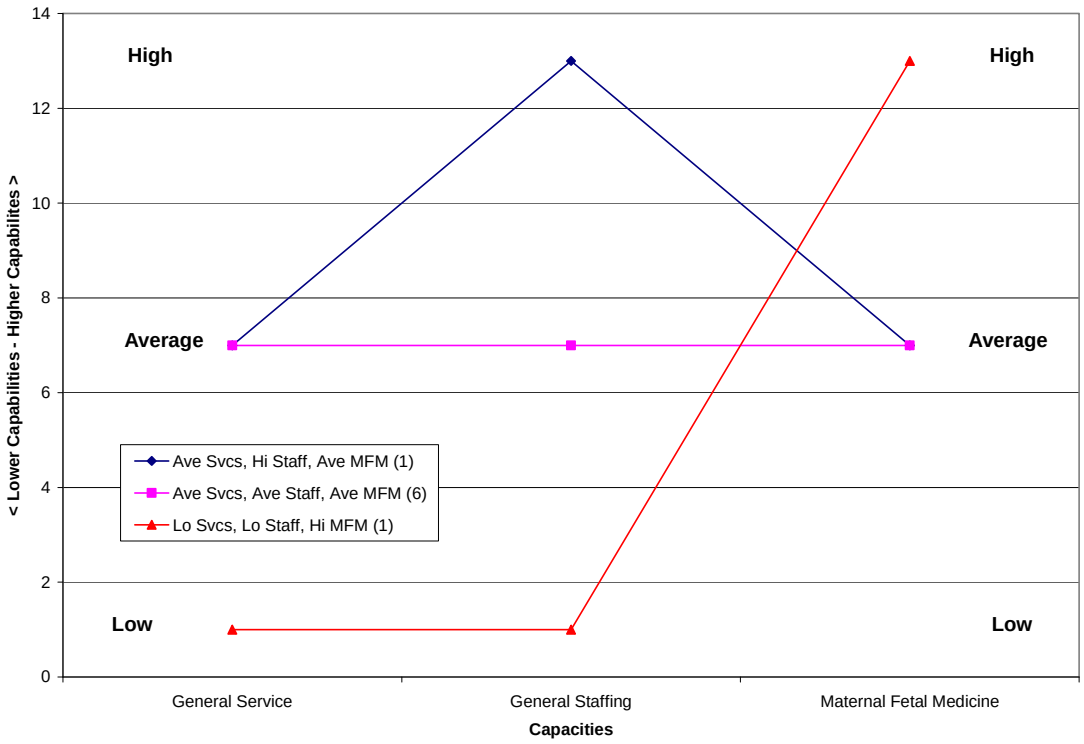
Figure 10: Summary of Level II Hospitals by Capacity - Group II



Level III

Thirteen hospitals classified themselves as Level III facilities. When examining Level III hospitals, we also added the reported number of maternal fetal medicine physicians on staff in each hospital to the analysis as we did in the Level II analysis. Again, the inclusion of maternal fetal medicine specialists is important when examining Level II and III hospitals because such hospitals deal with "high risk", "complicated", or otherwise worrisome pregnancies. The analysis is represented in the two figures below (see Figure 11 and Figure 12). We attempted to segregate the hospitals with "higher" and "average" (as compared to all hospitals in Level III) capacities in Figure 11 and hospitals with "lower" capacities in Figure 12. The majority of hospitals in this group (6) reported "average" general services, staffing and maternal fetal medicine in this group. In addition, one hospital reported "higher" staffing capabilities as compared to its peers while reporting "average" services and maternal fetal medicine capacities. Another hospital reported "higher" maternal fetal medicine capacities, but reported "lower" general service and staffing capacities.

Figure 11: Summary of Level III Hospitals by Capacity - Group I



The remaining five Level III hospitals appeared to exhibit lower capacities than those displayed above in Figure 11. The remaining hospitals in this level reported "lower" capacities in at least one of the following: general services, staffing and maternal fetal medicine. Again, the above discrepancies could be useful in the further classification of Level III hospitals by disaggregating hospitals into two levels: Level III-A and III-B based on the services by level of care as defined by AAP and American College of Obstetricians and Gynecologists. In addition, this method of classification for all levels relied on aggregate data and excluded some data from the survey because of difficulties introducing it into the analysis. However, these data elements might ultimately have some bearing on more exact classification of the levels. For example, in classifying Level II and III facilities, other sub-specialty services/providers besides Maternal Fetal Medicine could be used to evaluate capacity.

Figure 12: Summary of Level III Hospitals by Capacity - Group II

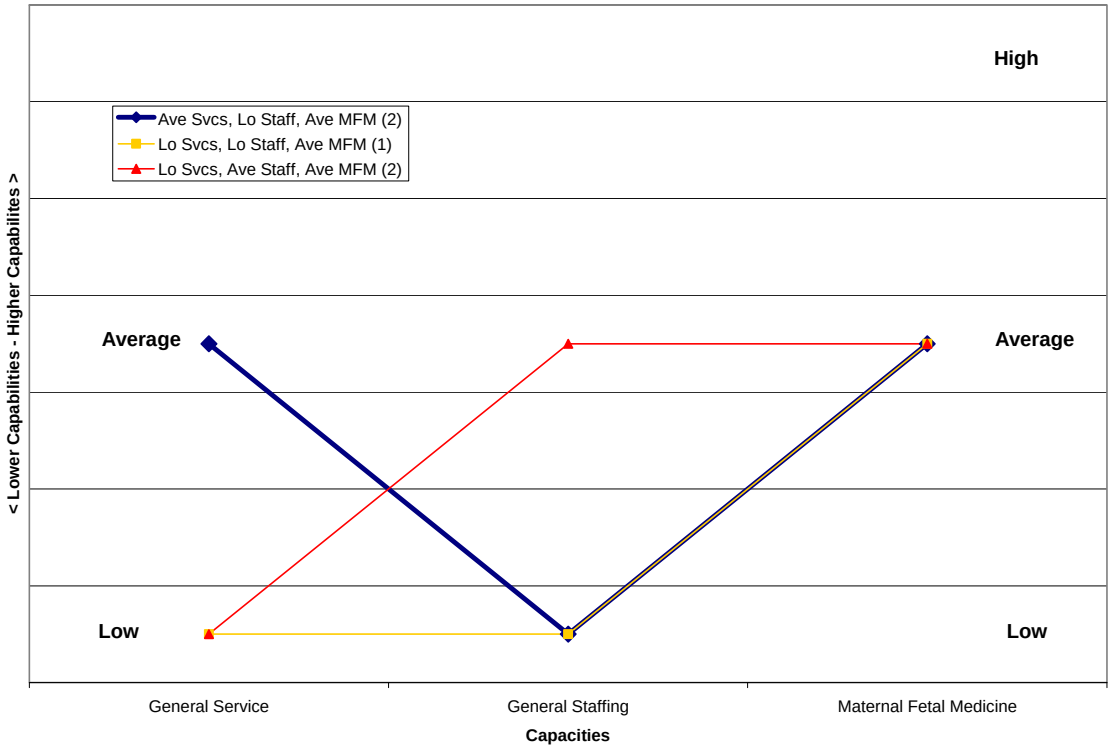
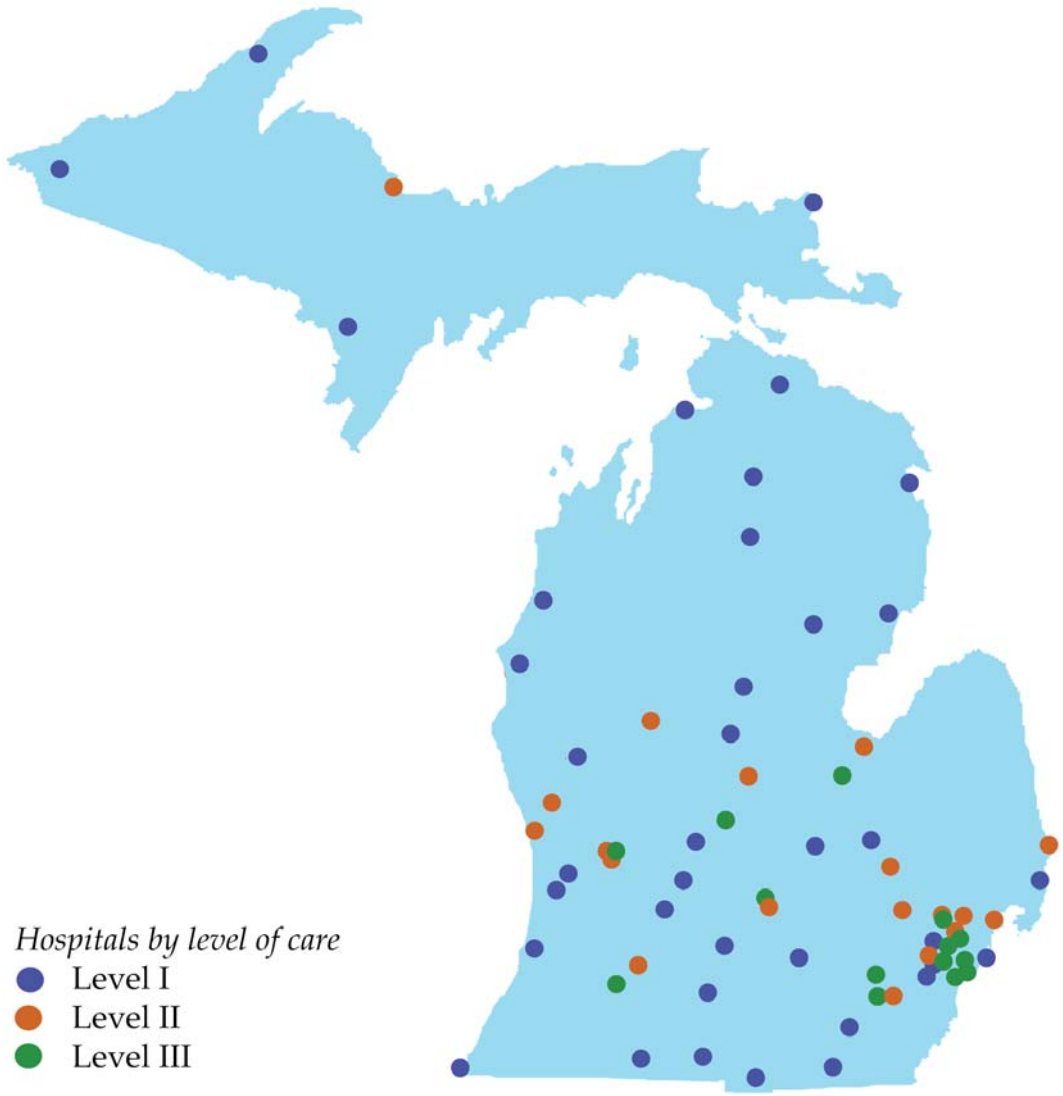


Figure 13: Map of Hospitals by Level (Self-ratings by Survey Respondents)



Level I Peer Comparisons

A number from 1 to 39 was assigned to each Level I Hospital that responded to the 2005 Michigan Perinatal Survey.

Hospital Number 1 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 2 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	☆☆	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 3 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 4 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆☆	☆☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 5 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 6 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 7 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 8 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 9 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 10 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	**Normal Nursery (11.6)**	**Stepdown Nursery (6.0)**	**NICU Nursery (4.0)**	**High Risk OB (0.0)**
☆☆	☆☆	**N/A**	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	**Family Practice (26.4)**	**Pediatrician (5.0)**	**OB (4.0)**	**Neonatology (0.3)**
☆☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	**Pediatric Surgery (0.0)**	**OB Anesthesiology (1.8)**	**Pediatric Cardiology (0.5)**	**Perinatology (0.0)**
N/A	**N/A**	☆☆	☆☆	**N/A**

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 11 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 12 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 13 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆☆	☆☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆☆	☆☆☆	☆☆☆	☆☆	☆☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 14 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 15 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 16 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆	☆☆	N/A	N/A	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 17 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 18 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 19 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆	☆☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆☆	☆☆	☆☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 20 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 21 (level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆☆	☆	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆☆	☆☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 22 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 23 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 24 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 25 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆☆	☆☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 26 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 27 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 28 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	**Normal Nursery (11.6)**	**Stepdown Nursery (6.0)**	**NICU Nursery (4.0)**	**High Risk OB (0.0)**
☆☆	☆☆☆	**N/A**	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	**Family Practice (26.4)**	**Pediatrician (5.0)**	**OB (4.0)**	**Neonatology (0.3)**
☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	**Pediatric Surgery (0.0)**	**OB Anesthesiology (1.8)**	**Pediatric Cardiology (0.5)**	**Perinatology (0.0)**
N/A	**N/A**	☆☆☆	☆☆☆	**N/A**

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 29 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 30 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 31 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 32 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 33 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 34 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 35 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 36 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 37 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	**Normal Nursery (11.6)**	**Stepdown Nursery (6.0)**	**NICU Nursery (4.0)**	**High Risk OB (0.0)**
☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	**Family Practice (26.4)**	**Pediatrician (5.0)**	**OB (4.0)**	**Neonatology (0.3)**
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	**Pediatric Surgery (0.0)**	**OB Anesthesiology (1.8)**	**Pediatric Cardiology (0.5)**	**Perinatology (0.0)**
N/A	N/A	☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 38 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	**Normal Nursery (11.6)**	**Stepdown Nursery (6.0)**	**NICU Nursery (4.0)**	**High Risk OB (0.0)**
☆☆	☆☆	☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	**Family Practice (26.4)**	**Pediatrician (5.0)**	**OB (4.0)**	**Neonatology (0.3)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	**Pediatric Surgery (0.0)**	**OB Anesthesiology (1.8)**	**Pediatric Cardiology (0.5)**	**Perinatology (0.0)**
N/A	**N/A**	☆☆	☆☆	**N/A**

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 39 (Level I)

I. Service Capabilities

	Beds (Average of all Level I Hospitals)			
General Services	Normal Nursery (11.6)	Stepdown Nursery (6.0)	NICU Nursery (4.0)	High Risk OB (0.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level I Hospitals)			
General Staffing	Family Practice (26.4)	Pediatrician (5.0)	OB (4.0)	Neonatology (0.3)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level I Hospitals)				
Maternal Fetal Medicine (0.1)	Pediatric Surgery (0.0)	OB Anesthesiology (1.8)	Pediatric Cardiology (0.5)	Perinatology (0.0)
N/A	N/A	☆☆☆	☆☆	N/A

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Level II Peer Comparisons

A number from 1 to 19 was assigned to each Level II Hospital that responded to the Michigan 2005 Perinatal Survey.

Hospital Number 1 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆	☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 2 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 3 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Health Number 4 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆☆	☆☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 5 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 6 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆	☆☆	☆☆	☆	☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 7 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆	☆	☆☆	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 8 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆	**N/A**	☆	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆☆	☆☆☆	☆☆☆	☆	☆☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 9 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆☆	☆☆☆	☆☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 10 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆☆	☆☆	☆☆	☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 11 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 12 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆	☆☆	☆☆	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 13 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆	☆☆	☆☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 14 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆	☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆☆	☆☆	☆☆	☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 15 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 16 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆☆	☆☆	**N/A**	☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 17 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	Normal Nursery (20.0)	Stepdown Nursery (8.1)	NICU Nursery (11.5)	High Risk OB (7.0)
☆☆☆	☆☆	N/A	☆☆	N/A

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	Family Practice (61.2)	Pediatrician (31.6)	OB (19.9)	Neonatology (3.5)
☆☆☆	☆☆	☆☆	☆☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	Pediatric Surgery (3.0)	OB Anesthesiology (29.5)	Pediatric Cardiology (23.2)	Perinatology (1.5)
☆☆☆	☆☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 18 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆	☆☆☆	☆☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 19 (Level II)

I. Service Capabilities

	Beds (Average of all Level II Hospitals)			
General Services	**Normal Nursery (20.0)**	**Stepdown Nursery (8.1)**	**NICU Nursery (11.5)**	**High Risk OB (7.0)**
☆☆	☆☆☆	☆☆	**N/A**	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level II Hospitals)			
General Staffing	**Family Practice (61.2)**	**Pediatrician (31.6)**	**OB (19.9)**	**Neonatology (3.5)**
☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level II Hospitals)				
Maternal Fetal Medicine (3.3)	**Pediatric Surgery (3.0)**	**OB Anesthesiology (29.5)**	**Pediatric Cardiology (23.2)**	**Perinatology (1.5)**
☆☆	☆☆	☆☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Level III Peer Comparisons

A number from 1 to 13 was assigned to each Level III Hospital that responded to the 2005 Michigan Perinatal Survey

Hospital Number 1 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆☆	☆☆	**N/A**	☆☆	☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆☆	☆☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 2 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	Normal Nursery (34.4)	Stepdown Nursery (33.0)	NICU Nursery (33.6)	High Risk OB (18.3)
☆☆	☆☆	N/A	N/A	N/A

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	Family Practice (54.1)	Pediatrician (58.9)	OB (39.9)	Neonatology (5.9)
☆	☆☆	☆☆	☆	☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	Pediatric Surgery (4.3)	OB Anesthesiology (23.1)	Pediatric Cardiology (18.3)	Perinatology (4.8)
☆☆	☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 3 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	Normal Nursery (34.4)	Stepdown Nursery (33.0)	NICU Nursery (33.6)	High Risk OB (18.3)
☆☆	☆☆	☆☆	☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	Family Practice (54.1)	Pediatrician (58.9)	OB (39.9)	Neonatology (5.9)
☆☆	☆☆	☆☆	☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	Pediatric Surgery (4.3)	OB Anesthesiology (23.1)	Pediatric Cardiology (18.3)	Perinatology (4.8)
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 4 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆	**N/A**	**N/A**	☆☆	**N/A**

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆	☆	☆☆	☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 5 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆	☆☆	☆☆	☆☆	☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆☆	☆☆	☆☆	☆☆☆	☆☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆	☆☆	☆☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 6 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆	☆☆	☆	☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆	☆☆	☆☆	☆☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 7 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆	**N/A**	**N/A**	**N/A**	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆	☆☆	☆☆	☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 8 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	Normal Nursery (34.4)	Stepdown Nursery (33.0)	NICU Nursery (33.6)	High Risk OB (18.3)
☆☆	☆☆	N/A	☆	N/A

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	Family Practice (54.1)	Pediatrician (58.9)	OB (39.9)	Neonatology (5.9)
☆	☆☆☆	☆☆	☆☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	Pediatric Surgery (4.3)	OB Anesthesiology (23.1)	Pediatric Cardiology (18.3)	Perinatology (4.8)
☆☆	☆☆	☆☆	☆☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 9 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	Normal Nursery (34.4)	Stepdown Nursery (33.0)	NICU Nursery (33.6)	High Risk OB (18.3)
☆☆	☆☆	N/A	☆☆	☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	Family Practice (54.1)	Pediatrician (58.9)	OB (39.9)	Neonatology (5.9)
☆☆	☆☆	☆☆	☆	☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	Pediatric Surgery (4.3)	OB Anesthesiology (23.1)	Pediatric Cardiology (18.3)	Perinatology (4.8)
☆☆	☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 10 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆☆	☆☆☆	☆☆	☆☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆☆☆	☆☆☆	☆☆☆	☆☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 11 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆☆	☆☆☆	☆	☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆☆	☆☆	☆☆☆	☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 12 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	Normal Nursery (34.4)	Stepdown Nursery (33.0)	NICU Nursery (33.6)	High Risk OB (18.3)
☆☆	☆☆	N/A	☆☆	☆☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	Family Practice (54.1)	Pediatrician (58.9)	OB (39.9)	Neonatology (5.9)
☆☆	☆☆	☆☆☆	☆☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	Pediatric Surgery (4.3)	OB Anesthesiology (23.1)	Pediatric Cardiology (18.3)	Perinatology (4.8)
☆☆	☆☆☆	☆☆	☆☆	☆☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Hospital Number 13 (Level III)

I. Service Capabilities

	Beds (Average of all Level III Hospitals)			
General Services	**Normal Nursery (34.4)**	**Stepdown Nursery (33.0)**	**NICU Nursery (33.6)**	**High Risk OB (18.3)**
☆☆	☆☆☆	☆☆☆	☆☆	☆☆

II. Staffing Capabilities

	Physicians (Average of all Level III Hospitals)			
General Staffing	**Family Practice (54.1)**	**Pediatrician (58.9)**	**OB (39.9)**	**Neonatology (5.9)**
☆☆	☆☆	☆☆	☆	☆☆

Physicians (Average of all Level III Hospitals)				
Maternal Fetal Medicine (4.9)	**Pediatric Surgery (4.3)**	**OB Anesthesiology (23.1)**	**Pediatric Cardiology (18.3)**	**Perinatology (4.8)**
☆☆	☆	☆☆	☆☆	☆☆

Key to Interpreting the Report Findings

☆	At least one standard deviation below the mean score for all hospitals in this peer group.
☆☆	Between one standard deviation above or below the mean score for all hospitals in this peer group.
☆☆☆	At least one standard deviation above the mean score for all hospitals in this peer group.
N/A	Not applicable. The hospital reported no capabilities or services for the category noted.

Conclusion and Recommendations

This study is one of the first, among many steps that must be taken in re-establishing a regionalized perinatal program in the State of the Michigan. Through this process, we sought to gain some insight to the capabilities of Michigan hospitals to deliver perinatal services and the availability of those services throughout the state.

While this process is a good first step in rebuilding the regionalized perinatal system in the state, there are a number of limitations to consider. First, the perinatal survey is new and not based on any previously validated tool. However, it did show that the previous categorization of level of care based on the licensed NICU beds is not a good reflection of hospital capabilities or services offered in the state. Secondly, the data provided by the hospitals was not validated. In addition, it is most likely that a number of hospitals have misclassified themselves based on the level of perinatal care they actually provide. It is important to notice that the analysis has a number of shortcomings as well. We made no attempts to weight the data or individual questions because of a lack of clear guidance on the importance of individual questions. Thus, the aggregation of questions impacts the overall solutions equally. This method provides a general understanding of the different types of specialists practicing within each hospital by perinatal level, but ultimately the ranking or weighting of various staffing and service capacities would almost certainly have some bearing on a more exact classification of the perinatal level for each hospital. Also, cluster methodology is considered exploratory in nature, thus more research and evaluation is needed in this area to determine the true capacity of perinatal services in the state.

Because of the difficult nature in assessing hospital capabilities, future examinations of individual hospital perinatal capabilities might include an onsite assessment team that, at a minimum, would review a representative sample of hospitals in the state. Such an assessment by a well-trained team could perform a more comprehensive assessment of perinatal capabilities in the state. In addition, such a team could most likely make better judgments about the value of certain services and staffing needs critical to delivering and improving perinatal services. The team could also develop and share best practices with other hospitals within the state that could lead to improved care and outcomes.

Overall, the responding hospitals found the survey useful and timely considering the functions of the current perinatal system in Michigan.

Although Michigan once led the nation in developing the regionalized approach to perinatal care, it is no longer the case. Given the unacceptably high infant mortality rate in the state and the benefits of a formal regionalized perinatal program, the impetus for developing a formal program in the state seems clear.

The experience of other states with long history of active involvement in the perinatal regionalization and thus good perinatal outcomes, (i.e., Washington, Massachusetts) could be used by Michigan in its efforts to rebuild a formalized perinatal program. The following should be also considered during this complex rebuilding process: 1) develop detailed definitions and practice guidelines for the levels of care based on the most recent AAP guidelines, 2) perform a spatial examination of current perinatal capacities and needs to develop more well defined and coordinated regions.

Appendix A – Survey Instrument

Regionalized Perinatal System Survey

This survey is designed to assess hospital capabilities to deliver perinatal services in the state of Michigan. The information gathered will be used as part of an ongoing effort to establish guidelines for delivering perinatal services within the state.

Michigan Department of Community Health (MDCH) is conducting this survey in collaboration with Grand Valley State University. Although your participation in this study is voluntary, participation from all Michigan hospitals is vital to ensuring the success of this study.

Please be assured that all responses are strictly confidential. All data from this survey will be reported in a method that will make it impossible to determine the identity of the individual hospitals or the individual(s) responding to this survey.

Upon completion of the survey, please return it in the postage paid envelope to Grand Valley State University. If you have any questions or concerns about this survey, please contact Professor Steve Borders at Grand Valley State University, (616) 331-6569 or borderss@gvsu.edu.

If you have any questions about your rights as a research participant that has not been answered by Professor Borders, you may contact the Grand Valley State University Human Subjects Review Committee Chair, Paul Huizenga, via telephone: (616) 331-2472.

Thank you in advance for your assistance with our project!

Contact Information - ***This information will be used only for follow-up questions regarding the survey***

Hospital Name	
Respondent's Name	
Title	
Address	
Address	
City	
State	
Zip	
Phone (area code)	( )
Fax (area code)	( )
E-mail	

Section A. General / Services - *Please mark your response with an "X" in the corresponding box to the right*

2. Below are the services (Ambulatory Prenatal Care as well as Inpatient Perinatal Health Care services) as defined by the American Academy of Pediatrics for level I, II and III perinatal health care facilities. *Please mark with an "X" if any of the following services in each item apply to your hospital. For example, if your hospital provides "surveillance and care of all patients admitted to obstetric service" listed in Part A, but does not provide "childbirth education", please mark Part A an "X".*	
A. Surveillance and care of all patients admitted to obstetric service: physical examination and interpretation of findings; routine laboratory assessment; assessment of gestational age and normal progress of pregnancy; ongoing risk identification; mechanisms for consultation and referral; psychosocial support; childbirth education; and care coordination.	
B. Established triage system for identifying high-risk patients who should be transferred to a higher level facility.	
C. Proper detection and initial care of unanticipated maternal-fetal problems that occur during labor and delivery.	
D. Capabilities to begin an emergency cesarean delivery within 30 minutes of the decision to do so.	
E. Availability of appropriate anesthesia, radiology, ultrasound, laboratory and blood bank services on a 24 hours basis.	
F. Care of postpartum conditions.	
G. Resuscitation and stabilization of all neonates born in the hospital.	
H. Evaluation and continuing care of healthy neonates in a nursery or with their mothers until discharge.	
I. Support for stabilization of small or ill neonates before transfer to a higher level facility.	
J. Consultation and transfer arrangements.	
K. Parent-sibling-neonate visitation.	
L. Care of appropriate high-risk women and fetuses, both admitted and transferred from other facilities.	
M. Fetal diagnostic testing (biophysical tests, amniotic fluid analysis, basic ultrasonography).	
N. Expertise in management of medical and obstetric complications.	
O. Stabilization of severely ill newborns before transfer.	
P. Treatment of moderately ill larger preterm and term newborns.	
Q. Provision of comprehensive perinatal care services to both admitted and transferred women and neonates from other facilities.	

2. Below are the services (Ambulatory Prenatal Care as well as Inpatient Perinatal Health Care services) as defined by the American Academy of Pediatrics for level I, II and III perinatal health care facilities. *Please mark with an "X" if any of the following services in each item apply to your hospital. For example, if your hospital provides "surveillance and care of all patients admitted to obstetric service" listed in Part A, but does not provide "childbirth education", please mark Part A an "X".*	
R. Advanced fetal diagnoses (targeted ultrasonography, fetal echocardiology).	
S. Advanced therapy (intrauterine fetal transfusion and treatment of cardiac arrhythmias).	
T. Medical, surgical, neonatal, and genetic consultation.	
U. Management of severe maternal complications.	
V. Evaluation of new technologies and therapies.	
W. Data collection and retrieval for reporting, evaluation of services or research purpose.	

3. Is your hospital affiliated with a medical school residency program?	
A. Yes	
B. No	

4. Is your hospital affiliated with a children's hospital?	
A. Yes	
B. No	

Section B. Newborn Beds and Deliveries – Please answer all questions in this section using data from calendar year 2004 (January 1st through December 31st)

5. Indicate the number of beds in each of the following categories your hospital had on the last day of the reporting period (12/31/04)?	
	Number of Beds
A. Normal newborn nursery beds	
B. Neonatal intermediate or stepdown care beds	
C. Neonatal intensive care beds	
D. High-risk OB beds	

6. Indicate the number of ***discharges*** for each of the following categories?	
	Number of Discharges
A. Normal newborn nursery beds	
B. Neonatal intermediate or stepdown care beds	
C. Neonatal intensive care beds	
D. High-risk OB beds	

7. Indicate the number of ***patient days*** for each of the following categories?	
	Number of Patient Days
A. Normal newborn nursery beds	
B. Neonatal intermediate or stepdown care beds	
C. Neonatal intensive care beds	
D. High-risk OB beds	

8. Indicate the number of ***admissions*** by type to your hospital?	
	Number of Admissions
A. Inborn (born in your hospital) admissions	
B. Outborn (born outside your hospital and transferred to your hospital) admissions	
C. Antepartum unit admissions	

9. Indicate the total number of ***admissions*** to your special care/high-risk antepartum inpatient unit.	
	Number of Admissions
A. Special care/high risk antepartum admissions	

10. Indicate the total number of **NICU** admissions by gestational age (if available):	
	Number of Admissions
A. Below 23 weeks	
B. 24-31 weeks	
C. 32-36 weeks	
D. 37+ weeks	
E. Data unavailable	

11. Indicate the total number of admissions to your **stepdown beds** by gestational age (if available):	
	Number of Admissions
A. Below 23 weeks	
B. 24-31 weeks	
C. 32-36 weeks	
D. 37+ weeks	
E. Data unavailable	

12. Please indicate whether your hospital is able to perform, on site and at the time of delivery, the following services?		
	Yes	No
A. Neonatal resuscitation		
B. Assisted ventilation		
C. Continuous positive pressure		
D. Sustained life support		

Section C. Staffing - *Please mark your response with an "X" in the corresponding box to the right.*

13. Which of the following best describes the person designated as responsible for perinatal outreach and coordination in your hospital?	
A. No one is personally responsible for this at my hospital	
B. Nurse	
C. Midwife	
D. Social Worker	
E. Other (Please indicate below):	

14. Indicate the number of board certified physicians on the hospital medical staff who are currently in either part-time or full-time practice? ("Board certified" meaning physicians who are board certified by an appropriate American subspecialty board.)	
	Number of Physicians
A. Family Practice	
B. Pediatrician	
C. Obstetrician	
D. Neonatology	
E. Maternal Fetal Medicine	
F. Pediatric Surgery	
G. Obstetrical anesthesiology	
H. Cardiology	
I. Perinatology	

15. Please indicate if physician specialists are available to provide on-site consultation for infants in your hospital in the following specialty areas. These individuals do not have to be full time at your hospital, but must have staff privileges and be able to offer formal in-patient consultations.		
	Yes	No
A. Pediatric cardiology		
B. Pediatric pulmonology		
C. Pediatric hematology		
D. Pediatric nephrology		
E. Medical genetics		
F. Pediatric neurology		
G. Pediatric immunology		
H. Pediatric pharmacology		
I. Pediatric infectious disease		
J. Obstetric anesthesia		
K. Postpartum care/lactation		
L. Neonatal physical therapy		
M. Neonatal assisted ventilation		

16. Is a neonatalogist available 24 hours a day to supervise and care for infants in the NICU or Neonatal Intermediate Care Unit?	
A. Yes, on call in the hospital at all times	
B. Yes, on call	
C. No	
D. Not applicable	

17. Do certified midwives provide care for low-risk women in the antepartum, intrapartum and postpartum periods, manage normal newborns, and/or provide primary gynecologic services in your hospital?	
A. Yes, on call in the hospital at all times	
B. Yes, on call	
C. No	
D. Not Applicable	

18. What is the highest level of training for the nurse responsible for administration of the **obstetrical** unit in your hospital? (This nurse may have responsibility for both obstetrical and neonatal services in some hospitals.)	
A. RN	
B. RN, BSN	
C. RN, BSN who is also a neonatal nurse practitioner	
D. RN, BSN, MS	
E. RN, BSN, MS who is also a neonatal clinical nurse specialist (NCNS)	

19. What is the highest level of training of the nurse responsible for administration of the **normal nursery** unit in your hospital? (This nurse may have responsibility for both obstetrical and neonatal services in some hospitals)	
A. RN	
B. RN, BSN	
C. RN, BSN who also has specialty training in pediatrics	
D. RN, BSN, MS	
E. RN, BSN, MS who is has specialty training in pediatrics	

20. What is the highest level of training of the nurse responsible for administration of the **NICU** unit in your hospital? (This nurse may have responsibility for both obstetrical and neonatal services in some hospitals.)	
A. RN	
B. RN, BSN	
C. RN, BSN who also has specialty training as a neonatal clinical nurse specialist (NCNS)	
D. RN, BSN, MS	
E. RN, BSN, MS who also has specialty training as a neonatal clinical nurse specialist (NCNS)	
F. Not applicable	

21. What is the highest level of training of the nurse responsible for administration of the **Neonatal Intermediate or Stepdown nursery** unit in your hospital? (This nurse may have responsibility for both obstetrical and neonatal services in some hospitals.)	
A. RN	
B. RN, BSN	
C. RN, BSN who also has specialty training as a neonatal clinical nurse specialist (NCNS)	
D. RN, BSN, MS	
E. RN, BSN, MS who also has specialty training as a neonatal clinical nurse specialist (NCNS)	
F. Not applicable	

22. How many nurses do you have for the following types of **intrapartum** patients? Please respond as the minimum nurse-to-patient ratios. (Example: Patients in labor – RNs:Patients – 2:1. If not applicable, indicate with a 0).	
	Registered Nurse to Patient Ratio
A. Patients in labor	:
B. Induction or augmentation of labor	:
C. Patients in second stage labor	:
D. Patients with medical or obstetric complications	:
E. Coverage for initiating epidural anesthesia	:
F. Circulation for cesarean delivery	:

23. How many nurses do you have for the following types of **antepartum** or **postpartum** patients? Please respond as the minimum nurse-to-patient ratios. (Example: Patients without complications – RNs:Patients – 2:1. If not applicable, indicate with a 0).	
	Registered Nurse to Patient Ratio
A. Patients without complications	:
B. Recently born neonates and those requiring close observation	:
C. Normal mother-baby couplet care	:
D. Antepartum/postpartum patients without complications, but in stable condition	:
E. Patients in post-op recovery	:

24. How many nurses do you have for the following types of **nursery and neonatal patients**? Please respond as the minimum nurse-to-patient ratios. (Example: Neonates requiring only routine care – RNs:Patients – 2:1. If not applicable, indicate with a 0).	
	Registered Nurse to Patient Ratio
A. Neonates requiring only routine care	:
B. Recently born neonates and those requiring close observation	:
C. Neonates requiring continuing care	:
D. Neonates requiring intermediate care	:
E. Neonates requiring intensive care	:
F. Unstable neonates requiring complex critical care	:

25. How many licensed social workers (MSWs) work in your hospital in obstetrical and nursery services?	
	Number
A. Licensed MSWs	

26. How many registered dietitians (RD) work in your hospital in obstetrical and nursery services?	
	Number
A. RDs	

27. How many respiratory therapists or nurses able to supervise the assisted ventilation of neonates are available in your hospital?	
	Number
A. Respiratory therapists or nurses	

28. How many occupational or physical therapists with neonatal experience are available in your hospital?	
	Number
A. Occupational/physical therapists with neonatal experience	

D. Transfers *Please mark your response with an "X" in the corresponding box to the right.*

29. Do any of the following issues with patient transportation impede transfers of high-risk obstetrical patients from your hospital? (Please mark all that apply)	
A. Lack of Advanced Life Support trained staff	
B. Lack of ambulances	
C. Lack of air/helicopter service	
D. High volume of patient transfers	
E. None	
F. Other (indicate):	

30. Does an overload in your NICU and/or Neonatal Intermediate Care Unit inhibit your ability to accept high-risk patients?	
A. Yes	
B. No	
C. Not applicable	

31. How often would you say you are unable to accept transfers of high-risk patients because your NICU and/or Neonatal Intermediate Care Unit is full?	
A. All of the time	
B. Some of the time	
C. Rarely	
D. Never	
E. Not applicable	

32. How would you rate the level of communication for transfers of high-risk obstetrical patients and their newborns **from other hospitals to your hospital?**	
A. Excellent	
B. Average	
C. Poor	
D. Very Poor	
E. Nonexistent	
F. Not applicable	

33. How would you rate the level of communication for transfers of high-risk obstetrical patients and their newborns **from your hospital to other hospitals?**	
A. Excellent	
B. Average	
C. Poor	
D. Very Poor	
E. Nonexistent	
F. Not applicable	

34. Please indicate the name of the Regional Perinatal Center in your area.	
A. Name of Regional Perinatal Center (please indicate below):	
B. Regional Perinatal Center does not exist in my area	
C. Don't Know	

35. Please provide the name of the hospital where you refer and transfer the majority of the high-risk patients, pregnant women, and neonates when needed?	
A. Name of hospital (please indicate below):	
B. My hospital does not transfer these types of patients	
C. Don't Know	

36. How would you rate the level of communication between your hospital and the Regional Perinatal Center, if such a center exists in your area?	
A. Excellent	
B. Average	
C. Poor	
D. Very Poor	
E. Nonexistent	
F. Not applicable	

37. Does the Regional Perinatal Center provide your staff with assistance (guidance, medical advice, assistance with transport) at the time the patient or patients require transfer, if such a center exists in your area?	
A. Yes	
B. No	
C. Not Applicable	

38. Has the Regional Perinatal Center provided you with technical support and education (protocols, staff in-service) to improve the initial care of obstetrical and/or newborn patient or patients?	
A. Yes	
B. No	
C. Not Applicable	

39. How often would you say that transfers of high-risk obstetrical and newborns to specialty and subspecialty hospitals are delayed?	
A. All of the time	
B. Some of the time	
C. Rarely	
D. Never	
E. Not applicable	

40. What is your agreement with the following statement: There is sufficient capacity for **uncomplicated maternity and newborn cases** in my area of the state.	
A. Strongly disagree	
B. Disagree	
C. Agree	
D. Strongly agree	

41. What is your agreement with the following statement: There is sufficient capacity for **high risk obstetrical patients** in my area of the state.	
A. Strongly disagree	
B. Disagree	
C. Agree	
D. Strongly agree	

42. Are you able to facilitate all appropriate transfers of high-risk patients to facilities that provide specialty or subspecialty care?	
A. Yes	
B. No	
a. If “no”, please indicate the reasons or obstacles you face that prevent transfers to facilities that provide specialty or subspecialty care?	

E. Level of care

43. Based on your responses to the above questions as they applied to your hospital, how would you rate its level of perinatal care?	
A. Level I (Basic care facility)	
B. Level II (Specialty care facility)	
C. Level III (Subspecialty care facility)	
D. Don’t know	

Please return this survey in the postage-paid envelope provided.

Thank you for taking the time to complete this survey. Your help and cooperation are greatly appreciated.